

OBSERVATIONS ON SOME BALANIDAE FROM MAHABALIPURAM

BY

K. S. SRINIVASAN,

Curator, Government Museum, Madras

(With a plate)

The following account is based on the periodical observations made during 1944-45 on some barnacles from Mahabalipuram, sea-shore village in the Chingleput District, about 53 miles from Madras and south of it. Our knowledge of the Balanidae of the Madras Presidency is mainly from the records from Pamban, Krusadai Island and Madras. Altogether four barnacles are known from these localities, viz. *Balanus tintinnabulum* (Linn.) var. *communis*, Darwin, *Balanus amphitrite*, var. *venustus*, Darwin, *Balanus longirostrum*, Hoek and *Chelonobia testudinaria* (Linn.) (Gravely, 1941; Sundara Raj, 1927). The barnacles collected from Mahabalipuram, however, included *Chthamalus stellatus* (Poli) in addition to the two species of *Balanus* already known from Krusadai and Madras. *Chthamalus stellatus* (Poli) has not been recorded from this Presidency, so far as I know, though it is reported from the coast of Bengal (Hoek, 1913).

The coast at Mahabalipuram is almost sandy except for a small area about the temple (the Shore-temple) situated on the shore-line. In this area there are few rocks, some of which, however, are a little inside the sea. A large number of boulders are piled up along the shore, to some distance, on either side of the shore temple, to protect the same from severe wave action. A sea-groyne is also constructed in front of the temple as an additional measure of safety. The rocks and the sea-groyne are subjected to severe wave action as they are being continually dashed by the strong rolling waves, while the boulders on either side of the temple are periodically dashed by the waves during high-tide and are only splashed or sprayed during low tide. The rocks, boulders and the sea-groyne form very suitable substrata for the barnacles to settle down and grow.

The distribution of the barnacles in this area is interesting. *Balanus tintinnabulum* is mainly confined to the rocks which are a little inside the sea and constantly dashed by the waves. On these rocks, a greater settlement is seen on the faces which are not directly exposed to the waves. Peculiarly enough, this barnacle is absent on the boulders and the sea-groyne at the shore.

Balanus amphitrite is seen in association with *Balanus tintinnabulum*. It is also seen at the shore on some of the boulders and rocks, which are, however, dashed by the waves. In several cases, this barnacle is seen in larger numbers on somewhat less exposed areas, and the more exposed areas being poorly colonised or not colonised at all.

Chthamalus stellatus is perhaps the most dominant species on this shore. It is plentiful on the more exposed sides of the wave-beaten and sprayed boulders and rocks on the coast, sometimes practically to the exclusion of the other species (Figs. 1 & 2). The settlement is luxuriant in the splash zone, and it gradually decreases towards the spray zone beyond which only stray patches are seen. It is plentiful on the sea-ward side of the groyne also, but on its land-ward side and in crevices, the growth is very limited. No growth, however, is seen on completely submerged boulders, even though in their vicinity, a large number of boulders, which are not submerged had plenty of these barnacles on them. It is thus interesting to note that *Chthamalus stellatus* is abundant on more or less open situations and tends to become scarce in positions of extreme shelter and is practically absent on submerged substrata, though according to Fischer (1928) it can survive a continuous immersion of twelve months under natural conditions. My observations, however, are in general agreement with those already made on the same barnacle by Hatton (1938), Hatton & Fischer-Piette (1932), Kitching (1934-35) and Moore (1935-36).

No attempt is made to go deeply into the question of the life-history of these barnacles. However, the few observations made on the forms occurring at the shore may be recorded. After the monsoon rains, by about the end of November 1944, the barnacles came up for the first time on rocks and boulders and the sea-groyne. They occurred in a few isolated patches here and there. In the succeeding months, their number gradually increased and a maximum growth was reached by about May 1945, and in the case of *Chthamalus stellatus*, practically all rocks and boulders splashed and sprayed showed extensive patches, sometimes even replacing the vegetation that was once before on some of the boulders. By about July 1945, *Balanus amphitrite* disappeared and only a few boulders in favourable situations were seen with *Chthamalus stellatus*. Later on, however, even they were killed and their shells destroyed, either by the grinding action of the sands carried by the waves, or by the boulders themselves being gradually smothered by the deposition of sand.

The shells of many of the barnacles are attacked by boring algae such as *Mastigocoleus*, *Hyella* and *Gomontia*. *Balanus tintinnabulum* is particularly interesting in that besides the shell-boring algae already referred to, several others are also seen growing on the shell. Some algae occur either as encrustations or cushions, while others are macrophytic and grow attached to the shell by their basal system. Among the encrusting and the cushion forming types may be mentioned *Peyssonnelia*, *Lithoderma* and *Lyngbya* and among the larger forms, *Cladophora*, *Chaetomorpha*, *Ectocarpus*, *Hypnea*, *Gracilaria* and *Grateloupia*.

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FIG. 1.

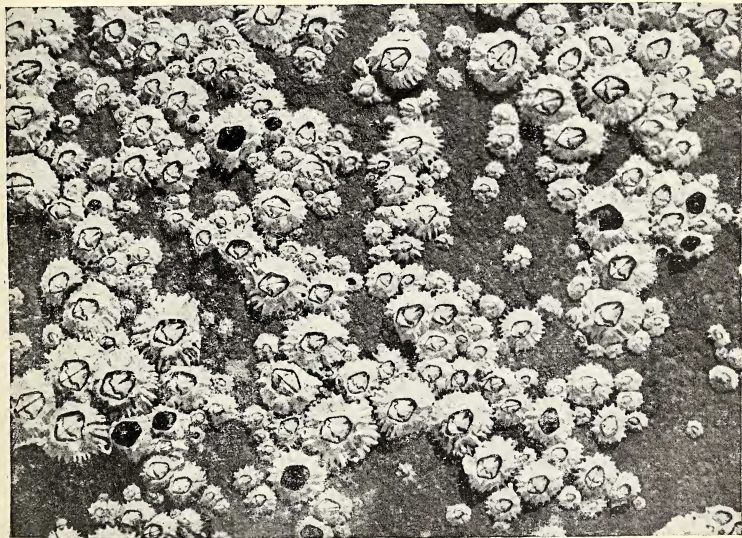


FIG. 2.

Photo by

K. S. SRINIVASAN.
Balanidae from Mahabalipuram.
(For explanation see end of article).